

# PATENT COOPERATION TREATY

AG

From the INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:  
G.E. EHRLICH (1995) LTD.  
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INVITATION TO PAY ADDITIONAL FEES  
AND, WHERE APPLICABLE, PROTEST FEE  
(PCT Article 17(3)(a) and Rule 40.1 and 40.2(e))

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18 DEC 2008

FILE No. 43842

G.E. EHRLICH (1995) LTD.

Date of mailing  
(day/month/year)

05/12/2008

d

Applicant's or agent's file reference

43842

**PAYMENT DUE**

within **ONE MONTH** from  
the above date of mailing

International application No.

PCT/IL2008/001105

International filing date  
(day/month/year)

11/08/2008

Applicant

CHEETAH MEDICAL LTD.

1. This International Searching Authority

(i) considers that there are 2 (number of) inventions claimed in the international application covered by the claims indicated on an extra sheet:

(ii) therefore considers that **the international application does not comply with the requirements of unity of invention** (Rules 13.1, 13.2 and 13.3) for the reasons indicated on an extra sheet:

(iii) ☒ has carried out a partial international search (see Annex) ☐ will establish the international search report on those parts of the international application which relate to the invention first mentioned in claims Nos.:  
**see extra sheet**

(iv) will establish the international search report on the other parts of the international application only if, and to the extent to which, additional fees are paid.

2. Consequently, the applicant is hereby **invited to pay**, within the time limit indicated above, the amount indicated below:

EUR 1.700,00	x	1	=	EUR 1.700
Fee per additional invention		number of additional inventions		currency/total amount of additional fees

3. The applicant is informed that, according to Rule 40.2(c), **the payment of any additional fee may be made under protest**, i.e., a reasoned statement to the effect that the international application complies with the requirement of unity of invention or that the amount of the required additional fee is excessive, where applicable, subject to the payment of a protest fee.

Where the applicant pays additional fees under protest, the applicant is hereby invited, within the time limit indicated above, to pay a protest fee (Rule 40.2(e)) in the amount of EUR 750,00 (currency/amount)

Where the applicant has not, within the time limit indicated above, paid the required protest fee, the protest will be considered not to have been made and the International Searching Authority will so declare.

4. ☐ Claim(s) Nos. \_\_\_\_\_ have been found to be unsearchable under Article 17(2)(b) because of defects under Article 17(2)(a) and therefore have not been included with any invention.

Name and mailing address of the International Searching Authority



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Authorized officer

Myriam Weber

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-22,26,37-46

Determination of cardiovascular parameters and body composition

1.1. claims: 3,12-17,38,40,41

Determination of cardiovascular parameters

1.2. claims: 4-8

Determination of body composition

1.3. claims: 18,19,42-45

analog noise reduction

1.4. claim: 46

System with skin electrodes

2. claims: 23-25,27-36

Determination of frequency bounds for the adaptive filter

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.  
Reference is made to the following document:

D1: US 2005/004609 A1

This Authority considers that there are 2 inventions covered by the claims indicated as follows:

Ia:	Claims 3,12-17,38,40,41	directed to determining cardiovascular parameters;
Ib:	Claims 4-8	directed to body composition determination;
Ic:	Claim 46	directed to a system with skin electrodes;
Id:	Claims 18,19,42-45	directed to analog noise reduction;
II:	Claims 23-25,27-36	directed to setting frequency bounds for the adaptive filter.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The closest prior art to the application as a whole has been identified

as document D1 and discloses the features of claim 1 (the references in parentheses referring to D1):

A method of processing an input signal (118) pertaining to at least one electrical property of an organ of a subject (paragraph 27), comprising determining a physiological condition of the subject (paragraph 31), selecting a frequency band, filtering said signal according to said frequency band (paragraph 31), and dynamically adapting said frequency band in response to a change in said physiological condition, thereby processing the signal (paragraph 31).

(Note that while D1 does not disclose selecting a frequency band explicitly, the adaptive filter starts with some initial value, which amounts to selecting a frequency band.)

Document D1 also discloses all the features of claim 2:

A filtering device, comprising: a first input unit (112) for receiving an input pertaining to at least one electrical property of an organ of a subject, a second input unit (230,236) for receiving data pertaining to a physiological condition of the subject, and a filtering unit (226) configured for filtering said input signal according to a frequency band which is dynamically adapted in response to a change in said physiological condition (paragraph 31).

Document D1 also discloses all the features of claim 9 and, mutatis mutandis, of claim 20:

A method of monitoring at least one electrical property of an organ of a subject, comprising sensing an input radiofrequency signal from the organ (paragraph 27), processing said input radiofrequency signal to provide a processed input signal (paragraph 28), filtering said input signal using a dynamically variable filter to provide a filtered signal (paragraphs 30-31), and using said filtered signal for monitoring the at least one electrical property of the organ (paragraphs 26, 32, 33 and 47).

Furthermore, document D1 discloses the features of the following dependent claims:

- Claims 10,21: see D1, paragraph 31.
- Claim 11: see D1, paragraph 28, see also D2, column 12, line 45 - column 13, line 8.
- Claims 22,26: see D1, paragraph 31.
- Claim 37: see D1, paragraph 27.
- Claim 39: see D1, paragraph 28, see also D2, column 9, line 26 - column 13, line 8 and Figs. 4-6.

It follows that the following technical features of claims 3-8, 12, 18, 23, 27, 40, 42, 44 and 46, which are directly dependent on the claims whose subject-matter is disclosed in D1, make a contribution over the disclosures of document D1 and can be considered as special technical features (STF) within the meaning of Rule 13.2 PCT: (note that although claim 13 is drafted as dependent on claim 9, it is in fact dependent on claim 12; see also the remarks under Item VIII).

- Claim 3: system for monitoring cardiac output;
- Claim 4: system for predicting BCM, FFM or TBW;
- Claim 5: system for determining hematocrit;
- Claim 6: system monitoring hydration status;
- Claim 7: system for discriminating tissue;
- Claim 8: system for calculating circumference of a body segment;
- Claims 12,40: calculating stroke volume, cardiac output or blood flow;
- Claims 18,44: mixing input and output RF signals;
- Claim 23: lower or upper frequency bound of filter vary linearly with heart rate;
- Claim 27: iteratively determined upper frequency bound of filter;
- Claim 38: hemodynamic reactance;
- Claim 42: envelope elimination unit;
- Claim 46: skin electrodes;

The problems solved by these special technical features can therefore be construed as:

- Claims 3,12,38,40: Determining cardiovascular parameters;
- Claims 4-8: Determining body composition;
- Claims 18,42,44: Analog noise reduction;
- Claims 23,27: setting frequency bounds for the adaptive filter;
- Claim 46: alternative measurement arrangement.

Grouping the STF by correspondence of technical effect, the following inventions can be distinguished:

- 1) Claims 3,12-17,38,40,41: means for determining cardiovascular parameters;
- 2) Claims 4-8: means for determining body composition;
- 3) Claims 18,19,42-45: analog noise reduction circuits;
- 4) Claims 23-25,27-36: criteria for adaptive filter frequency bounds.
- 5) Claim 46: skin electrodes;

Although inventions 1), 2) 3) and 5) are not so linked as to form a single general inventive concept (Rule 13.1 PCT), the effort involved in searching these four inventions does not justify an additional search fee. Therefore, inventions 1), 2), 3) and 5) have been searched.

**Annex to Form PCT/ISA/206  
COMMUNICATION RELATING TO THE RESULTS  
OF THE PARTIAL INTERNATIONAL SEARCH**

International Application No  
**PCT/IL2008/001105**

1. The present communication is an Annex to the invitation to pay additional fees (Form PCT/ISA/206). It shows the results of the international search established on the parts of the international application which relate to the invention first mentioned in claims Nos.:  
**see 'Invitation to pay additional fees'**
2. This communication is not the international search report which will be established according to Article 18 and Rule 43.
3. If the applicant does not pay any additional search fees, the information appearing in this communication will be considered as the result of the international search and will be included as such in the international search report.
4. If the applicant pays additional fees, the International search report will contain both the information appearing in this communication and the results of the international search on other parts of the international application for which such fees will have been paid.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/004609 A1 (STAHMANN JEFFREY E [US] ET AL) 6 January 2005 (2005-01-06)  paragraph [0024] - paragraph [0033] paragraph [0047] figure 2	1,2, 9-11, 20-22, 26,37,39
Y		3-8, 12-19, 38,40-45
X	US 6 076 015 A (HARTLEY JESSE W [US] ET AL) 13 June 2000 (2000-06-13) column 6, line 14 - column 17, line 4 figures 1,3,4,8,10	1,2,9, 11,20,39
X	US 4 705 049 A (JOHN ERWIN R [US]) 10 November 1987 (1987-11-10) column 3, line 26 - line 41 column 5, line 8 - line 26 column 6, line 32 - column 7, line 66 figures 1,4-6	1
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*Z\* document member of the same patent family

**Annex to Form PCT/ISA/206  
COMMUNICATION RELATING TO THE RESULTS  
OF THE PARTIAL INTERNATIONAL SEARCH**

International Application No  
**PCT/IL2008/001105**

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>RAZA S B ET AL: "FILTERING RESPIRATION AND LOW-FREQUENCY MOVEMENT ARTEFACTS FROM THE CARDIOGENIC ELECTRICAL IMPEDANCE SIGNAL"</p> <p>MEDICAL AND BIOLOGICAL ENGINEERING AND COMPUTING, SPRINGER, HEILDELBERG, DE, vol. 30; no. 5, 1 September 1992 (1992-09-01), pages 556-561, XP000323425 ISSN: 0140-0118 page 556, right-hand column, paragraph 3 - page 557, right-hand column, paragraph 1 page 558, left-hand column, paragraph 2 - right-hand column, paragraph 1 figure 3</p>	1,9,20, 22,26,46
A	<p>KUBICEK W G ET AL: "THE MINNESOTA IMPEDANCE CARDIOGRAPH - THEORY AND APPLICATIONS"</p> <p>BIOMEDICAL ENGINEERING, UNITED TRADE PRESS, LONDON, GB, vol. 9, no. 9, 1 September 1974 (1974-09-01), pages 410-416, XP001051054 ISSN: 0006-2898 page 411, middle column figures 1,2</p>	1,9,20, 22,26,46
X	<p>US 2003/187341 A1 (SACKNER MARVIN A [US] ET AL) 2 October 2003 (2003-10-02) paragraph [0043] - paragraph [0048] figures 1A,2</p>	1,2
X	<p>US 2004/133123 A1 (LEONHARDT STEFFEN [DE] ET AL) 8 July 2004 (2004-07-08) paragraphs [0002], [0018], [0019], [0025] figure 1</p>	1,9,10, 20,21,46
X	<p>US 2004/102908 A1 (LARSON DENNIS E [US] ET AL) 27 May 2004 (2004-05-27) paragraph [0020] - paragraph [0022] paragraph [0027] - paragraph [0041] figures 3,6A,6B,8</p>	1,9,20
Y	<p>WO 2006/087696 A (NEW LEAF CAPITAL LTD [GB]; KEREN HANAN [IL]; SIMON AVRAM B [GB]) 24 August 2006 (2006-08-24) cited in the application page 19, line 22 - page 22, line 3 page 23, line 7 - page 24, line 3 page 26, line 19 - page 27, line 3 page 28, line 7 - page 29, line 14 figures 2,4a-4h</p>	3,12-19, 38,40-45
A	<p>----- -/--</p>	46

**Annex to Form PCT/ISA/206  
COMMUNICATION RELATING TO THE RESULTS  
OF THE PARTIAL INTERNATIONAL SEARCH**

International Application No  
**PCT/IL2008/001105**

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 615 689 A (KOTLER DONALD P [US]) 1 April 1997 (1997-04-01) cited in the application abstract -----	4
Y	US 5 642 734 A (RUBEN PAUL [US] ET AL) 1 July 1997 (1997-07-01) cited in the application abstract -----	5
Y	US 2003/120170 A1 (ZHU FANSAN [US] ET AL) 26 June 2003 (2003-06-26) cited in the application paragraph [0030] - paragraph [0058] -----	6,8
Y	US 2006/085048 A1 (CORY PHILIP C [US] ET AL) 20 April 2006 (2006-04-20) cited in the application abstract -----	7

# Patent Family Annex

Information on patent family members

International Application No

PCT/IL2008/001105

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005004609	A1	06-01-2005	NONE
US 6076015	A	13-06-2000	AT 300332 T 15-08-2005
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